Eating kangaroo (good) and goat (bad) for rangelands

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ABSTRACT

During the late 1970s I developed an idea that later became known as 'sheep replacement for rangelands'. It grew from the realisation, gained during hundreds of hours of low flying on kangaroo surveys, that overgrazing by sheep was turning, or had already turned Australia's 'sheep rangelands' into desert. Seeking an economically productive alternative, I imagined a scenario in which the value of kangaroo meat could be increased enough, by effective marketing, to encourage wool growers to see kangaroos as a resource rather than a pest, and to reduce sheep numbers and, thus, total grazing pressure. The implication was that kangaroo meat would be marketed for human consumption, relying on its low fat, high protein characteristics, making it a healthier alternative to traditional livestock. Eating wild meat is not a new idea; humans were hunter gatherers until the last 8-10 thousand years. But the idea of marketing kangaroo meat in the service of land conservation was an idea that was hard for many people to get their heads around, and a hoped for marketing drive never eventuated. Now, almost 30 years since the idea was first published, kangaroos are still regarded as pests, kangaroo meat is still undervalued, and rangeland degradation continues apace. Indeed, recent developments are leading to what will be even more damaging forces driving rangeland destruction. There has indeed been 'sheep replacement', but in many areas it has been by goats. The goat meat industry is booming and history tells us that the rangelands will suffer further as a result. Additionally, 'cluster' fencing, introduced in some areas for wild dog control, is being hailed as a good way to 'manage' kangaroos. The future of the rangelands remains bleak.

Key words: drought, cluster fencing, fencing, feral goats, kangaroos as a resource, sustainable harvesting, wild dogs.

https://doi.org/10.7882/AZ.2017.001

To make things worse for rangelands, some unsettling changes are underway

I have been involved with the RZS for a long time, and have much admiration for the Forums and their subsequent publications and other Society activities over many years.

We human animals have been eating other animals throughout our evolution, so there's nothing unnatural about it. Throughout our evolution as hunter-gatherers we ate other animals routinely. We evolved as omnivores. Early on, the animals in our diet were taken from the wild. We foraged for plants and captured the animal contribution to our diet out in the bush or from the swamps, rivers and the sea. With the domestication of plants and animals which led to the agricultural revolution, and which came about 8½ to 10 thousand years ago, only very late in human evolution, humans abandoned hunter-gathering for farming, and a consequence of that is that there has been an enormous increase in human populations. A further consequence is that humans can no longer survive by hunter-gathering. With the high populations has come, of necessity, the development of high-intensity food production. Domestication has led to feedlots for cattle, pigs and chickens kept at high densities; factory farming.

It's not surprising that in our culture, shielded as we are from the tooth and claw realities of the natural world, concerns have risen about the welfare of the animals so treated. I suspect that nobody here today could be easy in their mind about catching a flying-fox and snapping its wing bones so that it can't escape but at least it can then be kept alive for a few hours, or perhaps even a few days, until it's time to eat it, but that's certainly been common practice for many people for many thousands of years.

As well as animal welfare, we're also all concerned about conservation of species and conservation of the land. This is a bit of a luxury of course, enjoyed by people in developed countries, as you all realise, and I won't extend that point in more detail, but it does bring me to the topic of my talk, which is about kangaroos. They're harvested of course for leather and also for food, early on mainly for pet food, but now increasingly for human consumption as well.

The harvesting is sustainable. There have been many studies showing that and a lot of long-term monitoring; nearly 40 years of it. The harvesting of free-range critters by a head shot is more humane than the processes by which many domesticated animals are raised, transported and slaughtered. There are concerns about the survival of young at foot, but that is becoming addressed with an increasing focus on shooting only the males. There's no doubt that eating kangaroo meat is natural. Aboriginal Australians have been doing it for thousands of years, and also the meat is superior to other red meats in terms of human health. Also, the harvest of free-range kangaroos is much more acceptable than growing animals for food in batteries or in feedlots.

What I am going to talk about is a different motivation for harvesting kangaroos, that is, still for food, but in the service of land conservation, rangeland conservation, because that is where my particular interest lies, and many of you will know that over many years I've been campaigning in support of redefining kangaroos from a woolgrowers' pest to a woolgrowers' resource.

The argument was and is that if woolgrowers in the sheep rangelands could get significant income from the kangaroos on their land, they could keep fewer sheep and thereby reduce the total grazing pressure on their land. I saw that as a conservation positive, and I still do. The idea that kangaroo harvesting could be made to serve rangeland conservation came from flying kangaroo surveys over Australia's sheep rangelands, initially in South Australia but also in Queensland and New South Wales and, twice, we managed to assess populations across the whole geographic range of the harvested species in Australia.

With plenty of time to look out the window as I flew long transects at low level while the observers counted, I had plenty of opportunity to observe the surrounding countryside from 76 m above it. Early on, I was struck - no, more than struck - I was appalled by the extent of the land degradation I saw and, what's more, it was absolutely, indisputably, clearly a consequence of overgrazing by sheep. I felt there had to be a better way, and I thought about it for a while and talked about it with a lot of people, and finally put out those ideas in an article for The Australian Zoologist, which was actually a transcript of a talk I had given at an RZS meeting (Grigg 1987).

So the idea I am talking about is not new, it has been around for many years and has been well publicised, but it is worth having it rehearsed a little just here. What the article was arguing in 1987 was that even though there was already a lot written about kangaroo harvesting, the idea of hitching it to aspirations for land conservation was a new facet. The article was essentially a recommendation to initiate a marketing drive to make hither-to undervalued kangaroos so valuable that landowners would start to see them as a marketable product that they could make money out of instead of just giving them away to the shooters. That would also give landowners a mechanism for reducing the number of sheep they were carrying, thus reducing the heavy impact their sheep were making on their land. They could reduce total grazing pressure and, of course, instead of seeing kangaroos only as a pest, they would come to see them as a resource. This would require good marketing and I suggested that a meat price rise of three to five times would be necessary. The idea subsequently became known as "Sheep replacement therapy for rangelands'.

Putting forward a proposal like that, of course led to a lot of criticism, and led me, and supportive colleagues in the RZS such as Mike Augee and Dan Lunney, into having to respond to attacks from various sides. RSPCA was generally supportive, but there was, inevitably, criticism from animal rights organisations and that continues. Some landholders also took exception, because I was mentioning land degradation (and blaming them).

So the RZS organised a substantial public Forum, at the University of New South Wales, inviting speakers from every interest group. And a jolly day was had by all, even with a band of protesters chanting outside. Naturally, with Dan Lunney involved, it was published, and the publication remains a very useful document (Lunney and Grigg 1988).

Over the next several years I took every opportunity to speak to graziers. It became a campaign. I talked in all states and with many grazier organisations and took every opportunity to speak. The ideas became very well aired and the people that I talked to, the audiences that I talked to always responded politely, often positively and sometimes even warmly, but there was always a caveat: IF the price gets high enough.......

The idea stimulated a workshop on the general topic of using a sustainable wildlife harvest as a conservation tool (Pople and Grigg 1994), as a component of a symposium "Conservation Biology in Australia and Oceania", hosted by the University of Queensland's then Centre for Conservation Biology (CCB) in 1991. The recommendations from the workshop generated a set of general principles that should guide decisions about wildlife harvest and these were later embodied in the Australasian Wildlife Management Society's position paper on the Sustainable Commercial Use of Wildlife.

A second symposium hosted by the University of Queensland's CCB in 1994, "Conservation through Sustainable use of Wildlife" focussed directly on the general topic (Grigg, Hale and Lunney 1995) and included several important papers focussing on kangaroo harvesting.

The specific concept of woolgrowers being able to supplement income from kangaroos, and reducing sheep numbers and, thus, total grazing pressure has been explored by two practical studies which attempted to implement the concept, both supported financially by the Rural Industries Research and Development Corporation (RIRDC). These were George Wilson's Wildlife Management Conservancy projects under a Sustainable Wildlife Enterprises (SWE) initiative, and Michael Archer's FATE (Future of Australia's Threatened Ecosystems) project.

George Wilson's model, as expressed by Wilson and Mitchell (2004) was to engage groups of landholders with an interest in communal management of wildlife resources and habitat protection to come together to form sub catchment cooperatives called Wildlife Management Conservancies (WMC) that can benefit financially from their conservation activities. The plan was implemented at two locations, the Maranoa Wildlife Management Conservancy in the Maranoa-Balonne catchment near Mitchell, Queensland and the Murray-Darling Rangeland Conservancy located on the Murray River near Wentworth in NSW. The Maranoa Kangaroo Cooperative continues to operate and makes a small annual profit from its chillers. However, it has not delivered the income stream to its major shareholder, the Landcare group, nor fostered the wider conservation benefits and other benefits to landholders (George Wilson *pers. comm.* 4 July 2016).

The FATE project (Ampt and Baumber 2010) aimed to '*explore the sustainable use of native species and ecosystems to generate conservation benefits. It concentrated on the management and commercial harvest of kangaroos, but also explored consumer attitudes to eating kangaroo meat, the opportunities and barriers to achieving conservation through sustainable use, the feasibility of the use on native mammals as pets and the potential of regional bio-energy strategies to drive improved natural resource management through native agroforestry*'. The FATE trial was in the Barrier Ranges near Broken Hill (Cooney 2009), also under the SWE umbrella of the RIRDC.

Full marks to both groups for initiative, and the published documentation and reports are important, additive and well worth reviewing, including the model proposed by Cooney, Baumber and Ampt (2008). It is unfortunate, however, that neither seems to have been a resounding success. On the other hand, the lack of a price rise for kangaroo meat, which I saw as a necessary pre-condition, must have been a serious drawback. There was already a good harvest for leather, but the meat price was, and is, quite low.

To my perception, the low price is anomalous; it reflects history, geography, and a relentlessly negative campaign against kangaroo harvesting, including a lot of fallacious claims about health and disease issues. In a wide ranging symposium dealing with potential conservation benefits of wildlife harvesting (Lunney and Dickman 2002) I listed many suggestions about kangaroo meat's many positives that would be grist to the mill of any competent marketing campaign; a very good product with limited availability, and over which Australia has the monopoly (Grigg 2002). And in 2007 I retired and spent the next seven years writing a book about the biology of crocodylians, so kangaroos had a reduced occupancy in my head.

But what brought me back into it was a newspaper article that was sent to me by Dan Lunney not long before this symposium. Under a headline "**Queensland drought: The unusual way we can help our struggling farmers**" was a piece written by Queensland's Sunday Mail journalist Daryl Passmore and published October 25, 2015.

The thrust of it was that Australians should "eat more kangaroo to help drought-hit farmers". "*…tens of thousands of the marsupials are reducing sheep and cattle numbers to virtually zero as the ravenous mobs devour precious pasture and water needed to feed stock.*" A group of southwestern Queensland mayors were said to be "*lobbying Federal Agriculture Minister Barnaby Joyce to kickstart a campaign to boost consumption.*"

Quilpie Mayor Stuart McKenzie was quoted as saying "*If there was a return to the grazier that the kangaroos could be harvested (sic), we would look at them in a different light. It changes the dynamic from a pest,*"

The article went on to lament that within a week after rain "*you will have thousands of them and they will eat the grass clear and move on*", that from a quota of 5 million a year only 1.8 million kangaroos were harvested, that kangaroos may outnumber sheep five to one, and that kangaroos starve to death in the drought.

Simply put, because of the drought, Australians were being urged to '*eat more kangaroos to help out drought-struck farmers*'. But no conservation dimension was implied, the urging was aimed at pest control, a means to reduce the number of kangaroos in favour of their sheep and cattle.

So, not much has changed in recent years. Kangaroos are still seen mainly as a pest, harvesting continues, surveys of the populations continue, quotas are set but not reached, and overseas markets are fragile for a variety of reasons. And even though kangaroo has become better established as a meat for local consumption (e.g. it can now be purchased from many supermarkets) and even though it is exported to many countries, it remains one of the cheaper meats, despite its many healthy properties (a red meat suitable for cardiac patients for example) and even though the supply is, in comparison to other red meat, quite limited.

So, is there a future for 'Sheep Replacement Therapy for Rangelands'? In 1987 I was optimistic that it was an idea whose time had come. Well, it still has not.

And, to make things worse for rangelands, some unsettling changes are underway:

The 'sheep replacement therapy' idea was developed at a time when there were many more sheep than there are now; about 160 million then, about 70 million now and, proportionally, fewer are grown for wool. That trend is typical worldwide because the wool price has fallen but, according to Keith Woodford, the problem in Australia is exacerbated because land degradation has left the rangelands less productive (Woodford 2010). Much land used previously for wool growing now grows beef.

Two new developments are very alarming:

- an explosion in goat harvesting and farming and

- a new fencing strategy, designed to control wild dogs.

On aerial surveys for kangaroos, we were certainly aware of there being many, many feral goats, often in very large herds, and we worried about it because of the additional damage they would be inflicting on the landscape. My direct involvement in kangaroo counting ceased in 2002 and up until then at least, people were treating goats mostly as pests and trying to keep their numbers low.

I retired in 2007 and my main focus became writing a book about crocodiles. Soon after the book was published early in 2015 my wife and I went on a trip to the Flinders Ranges and I was astonished at the number of goats we saw (Figs 1, 2), both on and off the national park. Not only were the animals themselves conspicuous in the landscape, so were their tracks (Fig. 3). I'd been in the Flinders Ranges every year between 1978 and 2002 on our annual kangaroo surveys in South Australia, and I'd never noticed goat tracks. There were so many in March 2015 that it rang alarm bells and when I got home and brought myself up to date I discovered that goats have become a really large industry, and increasing. Goats have become the main source of income for many, many properties, particularly in New South Wales. There has certainly been a lot of 'sheep replacement', but by goats, not kangaroos! And no rangeland 'therapy' can be expected.

Some properties focus on harvesting feral, that is, free range goats, others farm them, contained within fences. An article by journalist Julie Power in Queensland Country Life (June 9, 2015) described a free-range enterprise (Fig. 4) near Bourke, NSW which has an annual income of up to $5 million from a harvest of 150,000-200,000 feral goats. The article reported that the owner of the property buys them for about $1.70/kg live weight and exports then for $4.70, about $55 per goat. In contrast, on a property near Pooncarie, NSW they are farmed (Fig. 5). The

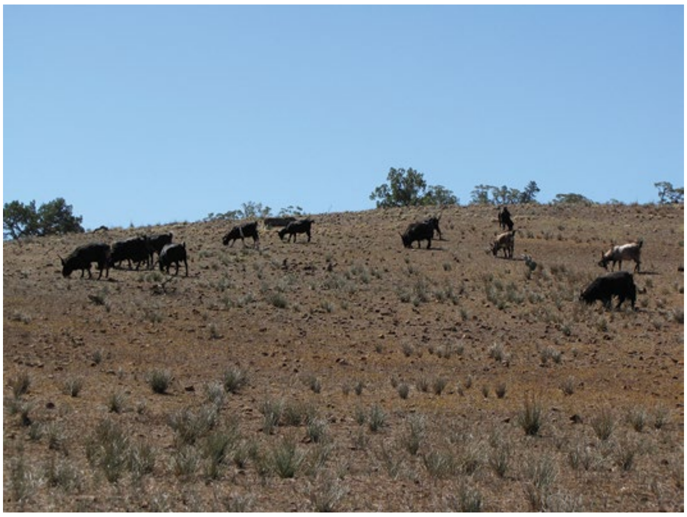


Fig. 1. Feral goats in the Flinders Ranges, South Australia, March 2015 (photo Gordon Grigg).

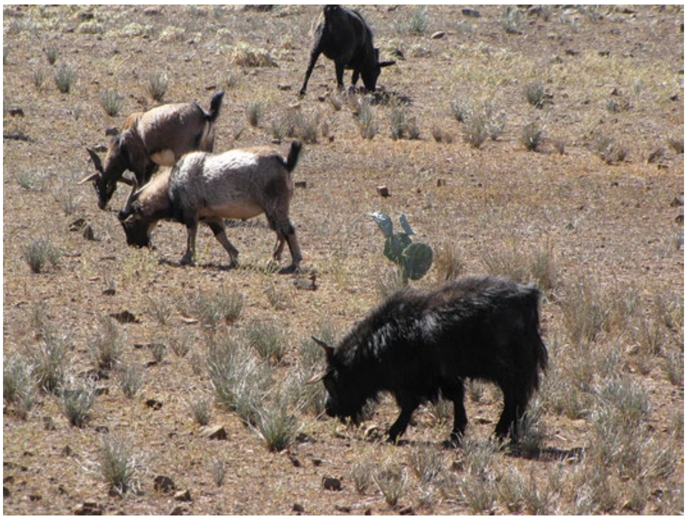


Fig. 2. Feral goats in the Flinders Ranges, South Australia, Marc.h 2015 (photo Gordon Grigg).

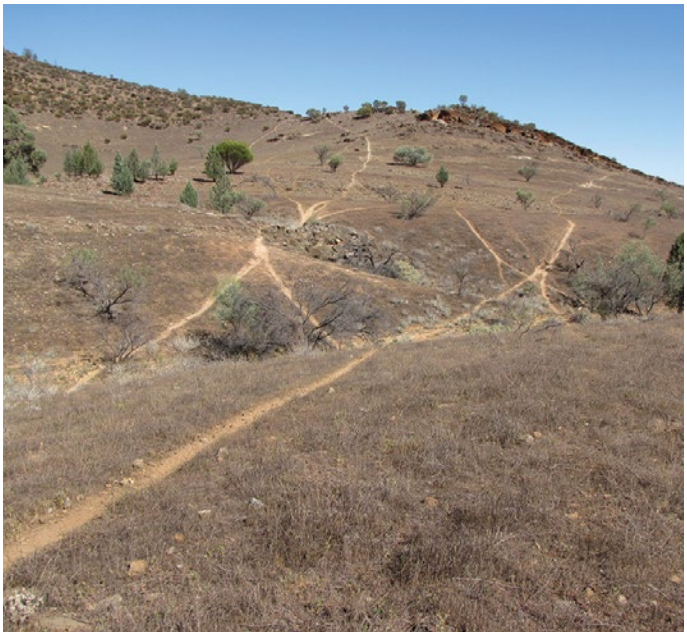


Fig. 3. Goat tracks. Flinders Ranges, South Australia, March 2015 (photo Gordon Grigg).

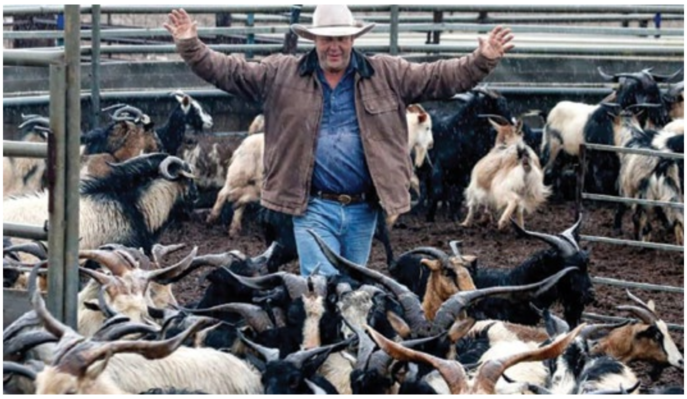


Fig. 4. Feral goats herded on a property near Bourke, NSW, 2015 (from Queensland Country Life, June 9, 2015).

farming operation was described in an article in The Land newspaper by Simone Norrie and Nick Heydon (28 May, 2014). The farm's production in 2012 was 20,000 goats at $3.10 /kg carcass weight, but it was noted that prices and off take do vary with the amount of rainfall and pasture. The owner enthused about the benefit of raising goats; *"There's no crutching, marking or drenching; the only upkeep is keeping the fences up."* There wouldn't be with kangaroos either, and there'd be no need to 'keep the fences up' either.

The distribution of feral goats pretty well overlaps the sheep rangelands (Fig. 6). Australia's feral goat population has increased from 1.4 million in 1997 to 4.1 million in 2008, and in 2010 there were an estimated 3.3 million feral goats in the rangelands (Pople and Froese 2012). A lot of the increase in goat numbers has been in NSW (Fig. 7). Perhaps surprisingly, although Australia is one of the smallest consumers of goat meat it is the world's largest exporter (MLC Fact Sheet, 2013). Most of the export is to the USA with Bahrain and the UAE next, and about 90% of the goats are sourced from feral populations.

It is easy to hear opinions that goats have kept lots of former woolgrowers afloat. In the article in Queensland Country Life mentioned above, the National Party member for the NSW State Electorate of Barwon, which

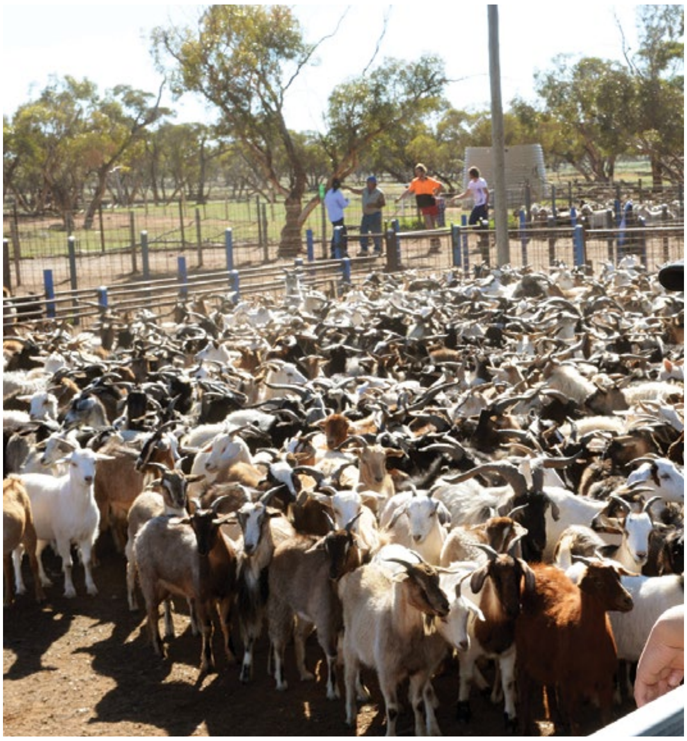
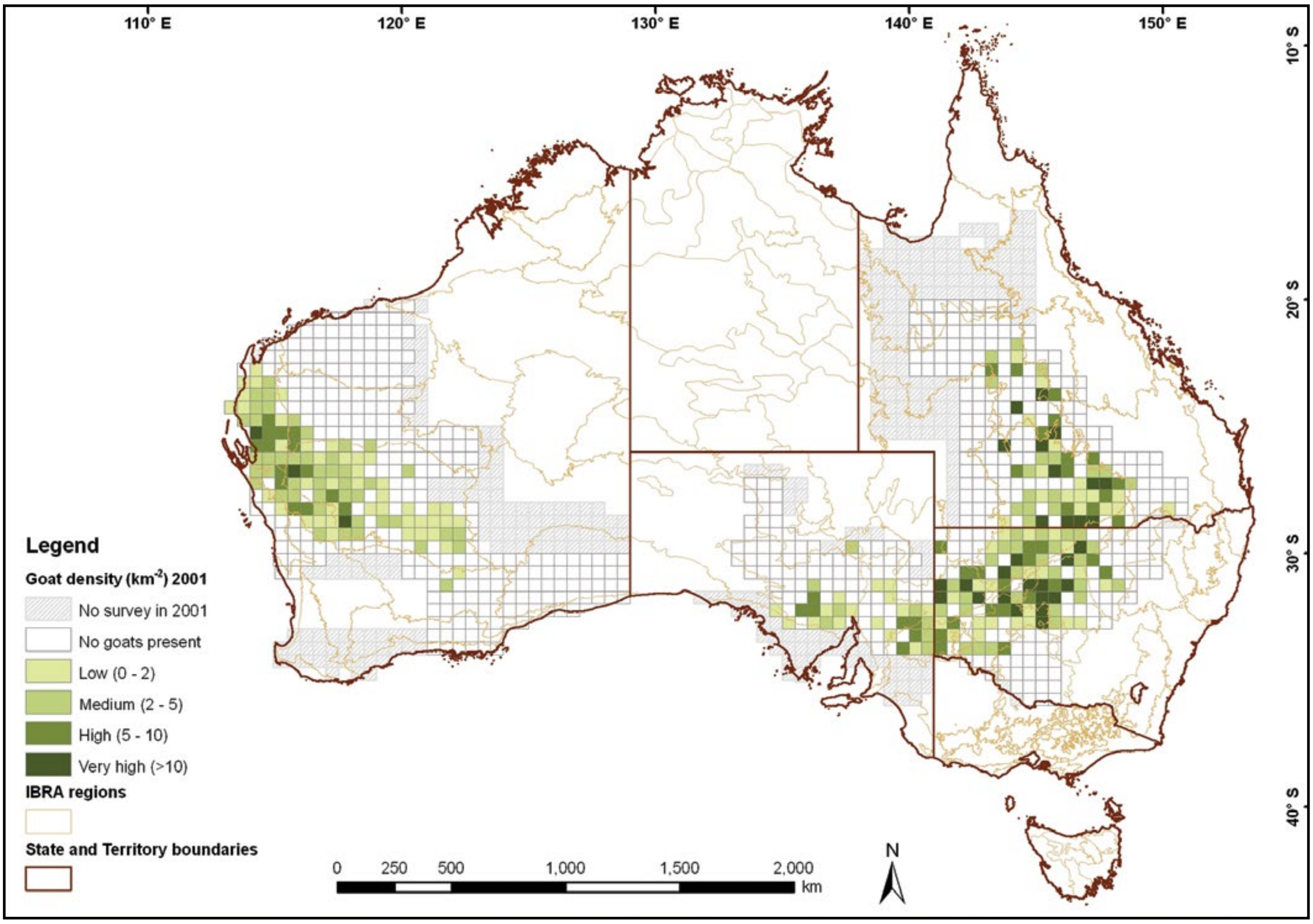


Fig. 5 Farmed goats herded on a property near Pooncarie, NSW, 2014 (from "The Land", May 28, 2014).


110° E
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20° S
30° S
40° S
Legend
Goat density (km^{-2}) 2001
No survey in 2001
No goats present
Low (0 - 2)
Medium (2 - 5)
High (5 - 10)
Very high (>10)
IBRA regions
State and Territory boundaries
0
250
500
1,000
1,500
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Fig. 6 Distribution and density of feral goats, 2001 (from Pople and Froese 2012. (Copyright State of Queensland, Department of Employment, Economic Development and Innovation, 2012.)

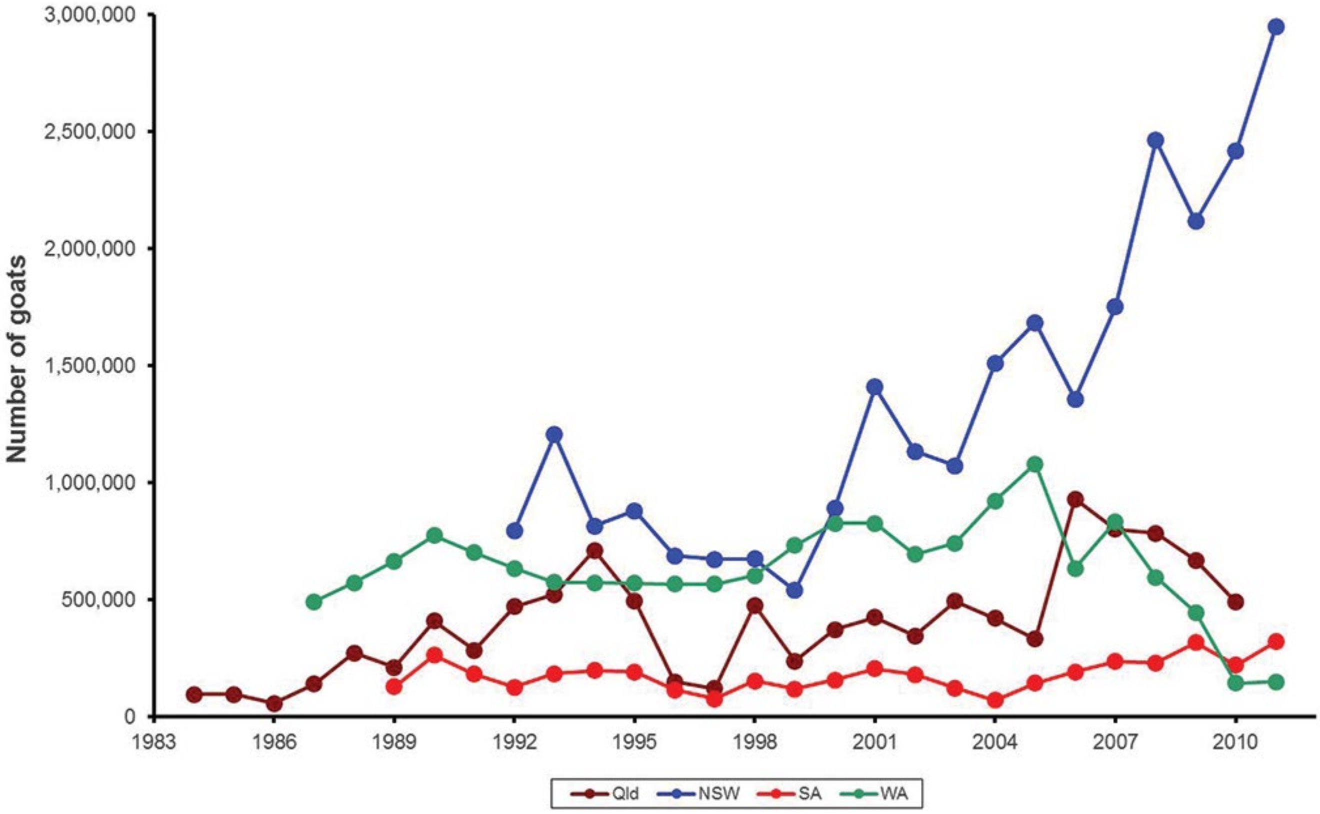

Fig. 7 Feral goat numbers in four States from 1984-2011 (from Pople and Froese 2012). (Copyright State of Queensland, Department of Employment, Economic Development and Innovation, 2012.)

includes Bourke, Walgett and Broken Hill, and covers about the top left hand quarter of NSW, is quoted as recognising the importance of goats in '*holding together many communities in the region*'.

And yet there is a *Threat Abatement Plan for Competition and Land Degradation by Unmanaged Goats*, that is, by feral goats. Isn't it ironic, and concerning, that a major and growing industry in what was once called 'the sheep rangelands' is now based on an animal that is known to be an environmental hazard. According to the Background Document to the TAP (Threat Abatement Plan) "*Competition and land degradation by feral goats are listed as a key threatening process under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Of the threatened species listed under the EPBC Act, unmanaged goats are considered a threat to 8 species of birds, 3 mammals, 1 insect and 44 plant species, with 2 of the plants (*Acacia unguicula *and a* Pultenaea *species) considered critically endangered (see Appendix A of the current TAP).*"

The three threatened mammals are rock wallabies, but at what densities do goats pose a threat to kangaroos? The focus of the TAP is on 'unmanaged goats', but they comprise by far the bulk of the populations, and by far the bulk of goats exported. And it is worth noting that there is no control over goat stocking rates on private land, which the 'managed goats' are unable to depart from when pastures fail in dry conditions. The onset of dry conditions often catches properties carrying more sheep or cattle than is reasonable; the same will happen with goats. It is easy to feel sorry for land owners whose support from wool growing has collapsed, and easy to understand their enthusiasm for taking the opportunity goats present. However, experience both overseas and here suggests that goats will eventually push the 'sheep' rangelands yet another step towards being a seriously unproductive desert. It is not hard to see goats out-competing kangaroos, and kangaroos themselves may become under serious threat when and where goat populations are high.

The second major threat is something called cluster fencing. I don't know how many of you have heard of cluster fencing, but there is a large and growing trend towards controlling wild dogs by a few properties combining resources and/or applying for funds to fence off a cluster of properties, maybe 10 properties; one of them is as large as 40 properties. The aim of it is to control wild dogs but the fences are kangaroo-proof as well (Fig. 8) and it has been pointed out that they will make it much easier to manage kangaroos too. The management technique for kangaroo management is not indicated, and people in the kangaroo industry are apparently not very happy about it, as you can imagine.

So, I think these are two major threats to Australia's rangelands. Already damaged by more than 100 years of

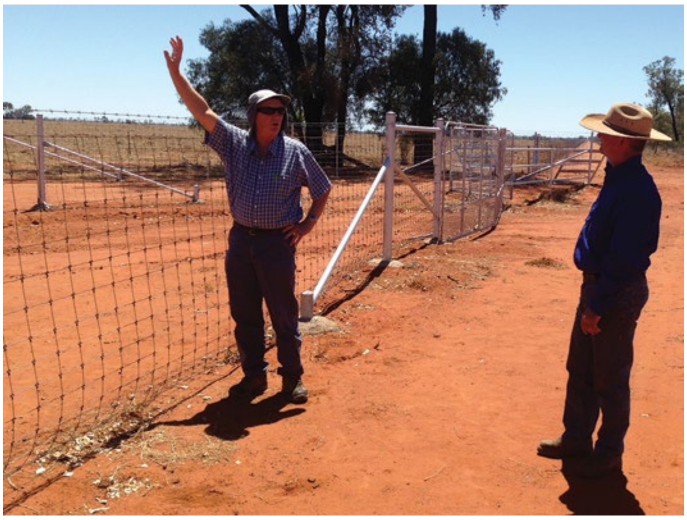

Fig. 8 A predator control fence; part of a cluster fencing project near Morven, Queensland. The people are both inside the fence, which is not dug into the ground but has a well sprung apron at ground level on the outside. (Photo Tony Pople).

intensive grazing by sheep, instead of the kangaroo-led recovery I hoped for it seems we will have a goat-led further deterioration such as happened around the Mediterranean.

With these new threats added to the old ones, is there any future for the concept of 'sheep replacement therapy for rangelands'? Well, who knows? There are plenty of kangaroos, certainly enough to form the basis of a sustainable industry at a much higher level than at present. The current low harvests are a reflection of low prices for the meat. Could the price of kangaroo meat ever get high enough to encourage graziers, landowners, to see kangaroos as a resource rather than a pest, and favour kangaroos over goats? Well, a couple of years ago I saw in a newspaper a report that our swimming team in Japan was having trouble finding meat about which they could be certain contained no additive or supplement that would lead to a positive result from a drug test. This apparently is a big issue. And the article reminded me yet again of my frustration that nobody has ever made a really serious effort to market kangaroo meat as a niche product directly to the sort of people who might best benefit from it, people recovering from cardiac surgery, for example, or who are at risk of heart problems, because it is a healthy, low fat, high protein meat. That would be a big market. And what is the potential of marketing kangaroo meat to athletes wanting access to good, high-quality red meat without the saturated fat complication? What a strong marketing tool it would be to advertise Aussie athletes as being powered by kangaroo. I think that quite appealing. What about footballers? Maybe somebody should suggest that to Jarryd Hayne. I see he's not doing quite so well lately. Perhaps somebody should send him over some kangaroo.

So perhaps there is still some potential for getting a conservation benefit from harvesting kangaroos, unless of course the goats win. And for those among you thinking that I must be a really hard bastard to argue in support of harvesting kangaroos, please note that I flew aerial surveys of kangaroos for 30 years and the thrill of seeing kangaroos bounding about in their natural habitat has never left me. And if harvesting some of them humanely, taking the top off a population which will otherwise lose many from starvation in the next drought, could also be assisting land owners to lower stock densities and reduce total grazing pressure while improving their bottom line, that would be wildlife and landscape management of which Australians could be proud.

Acknowledgements

I am grateful to Dan Lunney for being a very good sounding board and a source of encouragement and constructive feedback over many years.

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